

Attorney Docket No.  
COE-523

PATENT APPLICATION  
Serial No. 10/045,381

**AMENDMENTS TO THE CLAIMS**

1. (Canceled).

5 2. (Canceled).

3. (Canceled).

10 4. (Currently Amended): The system of claim 3A hardware system, adjustable vertically as installed in a waterway upstream from at least one barrier to the downstream migration of said fish in said waterway, said barrier having at least an upstream and a downstream side, said system installed and maintained to attract and collect fish in a collector gallery by passively simulating at least one natural hydraulic cue to which fish are responsive by adjusting said system to existing hydraulic conditions of said waterway,  
15 wherein said fish that are attracted by said system circumvent said at least one barrier, and  
wherein said system provides at least one natural hydraulic cue that elicits an instinctive response of said fish to select a portion of said waterway enclosed at least in part by said system and having a near maximum downstream velocity vector,  $u$ , and at least minimum  
20 strain rate variables in the downstream direction with respect to the depth and the width of said waterway, and  
wherein said variables are represented mathematically as  $\frac{\partial u}{\partial z}$  and  $\frac{\partial u}{\partial y}$ , respectively, and  
wherein both said variables ideally approach zero, and  
wherein said system further comprises at least an oven hood surface bypass collector  
25 (OH-SBC), having length, width and depth, a top and a bottom, an interior surface and an exterior surface, a main portion with at least one slot opening at said bottom and at least one extension that projects upstream from said at least one barrier along said width, and

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wherein said extension eliminates at least one zone of dead water that may be adjacent  
said upstream side of said barrier, and  
wherein said OH-SBC is positioned with said length adjacent and parallel to said  
upstream side of said at least one barrier, and  
5 wherein said top is generally parallel to the surface of said water in which said OH-SBC  
operates, and  
wherein said depth is selected to permit passage of fish of a pre-specified size, and  
wherein the said OH-SBC further comprising comprises:

at least one internal sluiceway circumscribed at least in part by said extension,  
10 wherein said extension is wedge shaped with the point of the wedge positioned farthest  
away upstream from said main portion, and  
wherein said extension maintains the same profile on its top as said main portion, being  
an unbroken extension thereof, and  
wherein said at least one internal sluiceway runs parallel to said upstream side of said at  
15 least one barrier;

at least one collector gallery that parallels said sluiceway immediately adjacent  
said upstream side of said at least one barrier and is circumscribed at least in part  
by said main portion of said OH-SBC,

wherein said fish are attracted to said collector gallery by said simulated hydraulic cue  
20 maintained by said system, and

wherein said fish are moved around said barrier by at least partially de-watering said  
collector gallery; and

at least one articulating extension affixed to said lower part of said collector  
gallery,

25 wherein said articulating extension at least partially controls the angle of attack of the  
water that flows under said collector gallery.

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5. (Previously Amended): The system of claim 4 further comprising at least one sensor, wherein said at least one sensor alerts to changing hydraulic conditions, permitting adjustment of said system.

5 6. (Canceled).

7. (Canceled).

8. (Canceled).

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9. (Canceled).

10. (Canceled).

15 11. (Previously Amended): The system of claim 4 in which said at least one barrier is selected from the group consisting of a dam, a hydroelectric powerhouse, a weir, a boom, a berm, a sluice gate, and a spillway, and combinations thereof, wherein each member of said group has at least one intake on said upstream side, and wherein said system is movable vertically without changing the horizontal orientation of said system to facilitate operation at an optimum level with respect to said at least one intake, and wherein said system operates to overcome at least one natural cue resultant from the operation of said at least one intake.

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25 12. (Previously Amended): The system of claim 4 in which at least one of said natural hydraulic cues is at least one visual cue.

13. (Previously Amended): The system of claim 12 further comprising a neutral color on the inside of said collector gallery.

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14. (Previously Amended): The system of claim 4 in which turbulence in said collector gallery is minimized by providing a smooth surface on said interior surface of said OH-SBC and applying a coating to said smooth surface,  
5 wherein said coating has a low coefficient of friction.
15. (Previously Amended): The system of claim 4 in which said first extension completely covers the space above and immediately upstream of an intake of a dam,  
10 wherein said first extension further displaces any eddy otherwise occurring above said intakes and in the vicinity of said slot opening.
16. (Previously Amended): The system of claim 4 further comprising at least one active stimulus provided in the region of said collector gallery, said stimulus selected from the group consisting essentially of natural light, artificial light, sound, and combinations thereof.  
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17. (Canceled).
18. (Canceled).
- 20 19. (Canceled).
20. (Canceled).
- 25 21. (Canceled).
22. (Canceled).

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23. (Previously Presented): A system simulating at least one natural hydraulic cue to which fish are responsive in water, said at least one natural hydraulic cue eliciting an instinctive response of fish to select a portion of a stream having a near maximum downstream velocity vector,  $u$ , and at least minimum strain rate variables in the downstream direction with respect to the depth and the width of the stream, said variables represented mathematically as  $\frac{\partial u}{\partial z}$  and  $\frac{\partial u}{\partial y}$ , respectively, such that both said variables ideally approach zero, said system comprising at least an oven hood surface bypass collector (OH-SBC), having length, width and depth, a top and a bottom, an interior surface and an exterior surface, a main portion with at least one slot opening at said bottom and at least one extension that projects upstream from at least one barrier along said width, said barrier having at least an upstream and a downstream side, said OH-SBC further comprising:
- at least one internal sluiceway circumscribed at least in part by said extension,
  - said sluiceway running parallel to said upstream side of said at least one barrier,
  - wherein said OH-SBC is positioned with said length adjacent and parallel to said upstream side of said at least one barrier, and
  - wherein said top of said OH-SBC is generally parallel to the surface of said water in which said OH-SBC operates, and
  - wherein said extension eliminates at least one zone of dead water that may be adjacent said upstream side of said barrier, and
  - wherein said extension is wedge shaped with the point of the wedge positioned farthest away from said main portion, and
  - wherein said extension maintains the same profile on its top as said main portion, being an unbroken extension thereof;
  - at least one collector gallery that parallels said sluiceway and is circumscribed at least in part by said main portion of said OH-SBC,
  - at least one articulating extension affixed to said lower part of said collector gallery,

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wherein said articulating extension at least partially controls the angle of attack of the water that flows under said collector gallery, and

wherein said fish are attracted to said collector gallery by said simulated hydraulic cue maintained by said system, and

5 wherein said fish that respond to said at least one simulated hydraulic cue circumvent at least one barrier to the downstream migration of said fish, and

wherein said fish are moved around said barrier by at least partially de-watering said collector gallery; and

wherein said depth is selected to permit passage of fish of a pre-specified size.

10 24. (Previously Presented): The system of claim 23 further comprising at least one sensor, wherein said at least one sensor alerts to changing hydraulic conditions, permitting adjustment of said system.

15 25. (Previously Amended): The system of claim 23 in which at least one of said natural hydraulic cues is at least one visual cue.

26. (Previously Amended): The system of claim 25 further comprising a neutral color on the inside of said collector gallery.

20 27. (Previously Presented): The system of claim 23 in which turbulence in said collector gallery is minimized by providing a smooth surface on said interior surface of said OH-SBC and applying a coating to said smooth surface, said coating having a low coefficient of friction.

25 28. (Previously Presented): The system of claim 23 in which at least one additional stimulus is provided in the region of said collector gallery, said stimulus selected from the group consisting essentially of natural light, artificial light, sound, and combinations thereof.